MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

DDB5321 DATABASE SYSTEMS

(All IT Groups)

14 OCTOBER 2019
2:30 p.m. – 4:30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS:

1. This question paper consists of 4 pages.
2. Answer **ALL** questions.
3. Write your answers in the answer booklet provided.

Structured Questions, 4 Questions (Total: 40 Marks)
Instruction: *Answer **ALL** the questions in the Answer Booklet provided.*

Question 1 (10 Marks)

You have been appointed by an international football association to design a simple system to keep track of all football players and football clubs in the world.

The system able to keep track for the details of a football player including name, position, salary, market value, football club they belong to and a country of their nationality. One player can only sign for one football club at a time. Some players might not have any club attached due to end of contract or retirement. It is also noted that a player can play in more than one positions in the field and one position can be assigned to many players. Each position has a position name and also position description.

Besides, football club's information including club's name, nickname, manager's name and a country the club belongs can also be traced from the system. A country has at least one football club.

In order to ease the track of transfer matter, the system also keep track of agent of all football player. One football agent can have more than one players attached to them. However, players can decide hire or not to hire a football agent to take care of their career details. There are also some cases that an agent does not hold any players.

Based on the situation given above, draw a complete Entity Relationship Diagram using the **Crow's Foot** notation which include:

i. All entities and attributes
ii. Relationships
iii. Connectivity and relationship participation
iv. Primary and foreign keys

Continued.....

Question 2 (10 Marks)

Write the SQL commands based on the tables given below.

MOVIE table

movie_ID	movie_title	movie_year	movie_rating	genre_ID	movie_budget	movie_duration
1	The Dark Knight	2008	9.0	1	185,000,000	152
2	Avengers: Endgame	2019	8.7	1	356,000,000	181
3	Instant Family	2018	7.4	3	48,000,000	118
4	The Conjuring	2013	7.5	2	20,000,000	112
5	The Conjuring 2	2016	7.4	2	40,000,000	134
6	Inception	2010	9.0	4	160,000,000	148
7	The Dark Knight Rises	2012	8.4	1	250,000,000	164
8	Avengers: Infinity War	2018	8.5	1	321,000,000	149
9	Ted 2	2015	6.3	3	68,000,000	115
10	IT	2017	7.4	2	3,500,000	135

GENRE table

genre_ID	genre_name
1	Action
2	Horror
3	Comedy
4	Science fiction
5	Romance

a) List all the movies' titles where title starts with "*the*". (1 Mark)

movie_title
The Conjuring
The Conjuring 2
The Dark Knight
The Dark Knight Rises

b) Show the movie id, title and rating where the movie rating is above 8. (1 Mark)

movie_id	movie_title	movie_rating
1	The Dark Knight	9
2	Avengers: Endgame	8.7
6	Inception	9
7	The Dark Knight Rises	8.4
8	Avengers: Infinity War	8.5

c) Show how many movies has spent budget which greater than 100,000,000 based on year. (1 Mark)

movie_year	total
2008	1
2010	1
2012	1
2018	1
2019	1

Continued.....

d) Add another field in the movie table called "*movie_language*". This field will store the language details of the movie and it cannot be empty. (1 Mark)

e) Calculate the total duration of all movies. (1 Mark)

Total duration
1408

f) Display the number of movies for each genre. (1.5 Marks)

genre_name	total
Action	4
Comedy	2
Horror	3
Science fiction	1

g) Display the title of movies and it's genre that has the highest rating. (1.5 Marks)

movie_title	genre_name
The Dark Knight	Action
Inception	Science fiction

h) List the genre and title of movies which the duration of the movie is more than 120 minutes and with the genre "*action*" or "*horror*" (*use the "IN" operator*). (2 Marks)

movie_title	genre_name
The Dark Knight	Action
Avengers: Endgame	Action
The Dark Knight Rises	Action
Avengers: Infinity War	Action
The Conjuring 2	Horror
IT	Horror

Question 3 (10 Marks)

Pulau Meranti High School manages the fundamental functions of a library and the data is stored in an Excel spreadsheet. The admin department decides to convert it to a proper database format and requests you to propose a database design for the Book Borrowing System. Based on the sample record found in **APPENDIX A**:

Write the relational schema that meets 1NF, 2NF and 3NF requirements.

Continued.....

Question 4 (10 Marks)

a) List **FOUR (4)** steps that involved in logical design process. (2 Marks)

b) List and explain **TWO (2)** types of database backups in database design. (4 Marks)

c) What is association in UML diagram? Explain about it. (2 Marks)

d) Differentiate the role between database administrator and system administrator. (2 Marks)

End of Page

APPENDIX A

Sample record for Question 3

Book_ID	Book_Name	Publisher_ID	Publisher_Name	Publisher_Country	Stud_ID	Stud_Name	Stud_Course	IssueDate	ReturnDate	Category_ID	BooK_Category
A1101	Algorithm Math	P001	Pearson	United Kingdom	10011111	Kang Ju On	Computer Science	11.11.2018	11.12.2018	AB2314	Math
B1121	The Power of Trust	P003	Reed Elsevier	United State	10011002	Dania Herlina	Law	23.09.2018	05.10.2018	AC9654	Management
C3221	Calculus	P001	Pearson	United Kingdom	10011100	Sufian Helmi	Mathematics	03.04.2018	25.05.2018	AB2314	Math
D3422	Data Science	P025	Random House	Germany	10011111	Kang Ju On	Computer Science	06.01.2018	07.02.2018	AD1235	IT
E2211	Signal Processing	P069	Gakken	Japan	10011121	Revina Rekha	Engineering	21.09.2018	12.10.2018	AE24	Engineering
F4533	Chemical and Physics	P003	Reed Elsevier	United State	10011132	Dave Annand	Science	15.12.2018	20.12.2018	AE24	Engineering
F4533	Chemical and Physics	P003	Reed Elsevier	United State	10011121	Revina Rekha	Engineering	02.01.2019	05.01.2019	AE24	Engineering